as by the method of comparison of averages for all "odd" and "even" we find:

Series	Regression Line Test	Difference in Means
L	—.0137	—.0030
LL	—.0768	—.2506
GG	—.0164	—.0329
NH	—.0597	—.0338
ND	—.0777	—.1754
Unweighted averages	—.0489	—.0991

By both methods all the deviations are negative in sign, though of a low order of magnitude. Apparently, bean seeds produced in pods with an odd number of ovules are about .0025 gram lighter than those in pods with an even number. Asymmetrical pods are, therefore, physiologically less efficient than symmetrical. To be sure the relationship is a very delicate one; the individual series show considerable fluctuations. Many more observations are desirable, but the duplication of a series of over 23,000 individual weighings with records of the characteristics of the pods from which the seed was derived is not easily carried out. The findings are consistent throughout within the limits of error. They confirm from an entirely different angle conclusions drawn from studies of selective elimination and of fertility and fecundity. It seems worth while, therefore, to place on record the results for the available data.

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HEAT CONDUCTIVITY OF CRYSTALS

FOR several years one of the experiments in our course in physical crystallography has been a qualitative determination of the conductivity of heat in crystals by the Senarmont method described by Groth, "Physikalische Krystallographie," page 178. The Senarmont apparatus is used for these tests. It consists of a stage for supporting the crystal, so arranged that a spring presses it up against the contact point of the conductor. The latter is bent at right angles and may be heated at the other end by a flame. Results were quite unsatisfactory because when the point, resting on the paraffined surface of the crystal, became heated it radiated sufficient heat to melt the paraffine and the figure, which might have been obtained by heat conducted through the crystal, was destroyed. Since the heat was radiated equally in all directions a circle in the paraffine resulted. A modification of this method gives much better results.

A plate of the mineral, for example, gypsum, about 1–2 mm. thick is dipped in melted paraffine until a thin even coat is formed on one side. The plate is then placed on the stage of the instrument with the paraffined surface down, but is insulated from the stage by strips of asbestos under the edges. The point of the conducting wire rests in a depression in the upper unparaffined surface. In this way, when the heat is conducted along the wire to the crystal it must actually be transmitted through the gypsum before it can melt the paraffine. A very sharply defined ellipse will be noted in the paraffine and this is clearly due to differences in conductivity of the gypsum in different directions and not to radiation from the wire.

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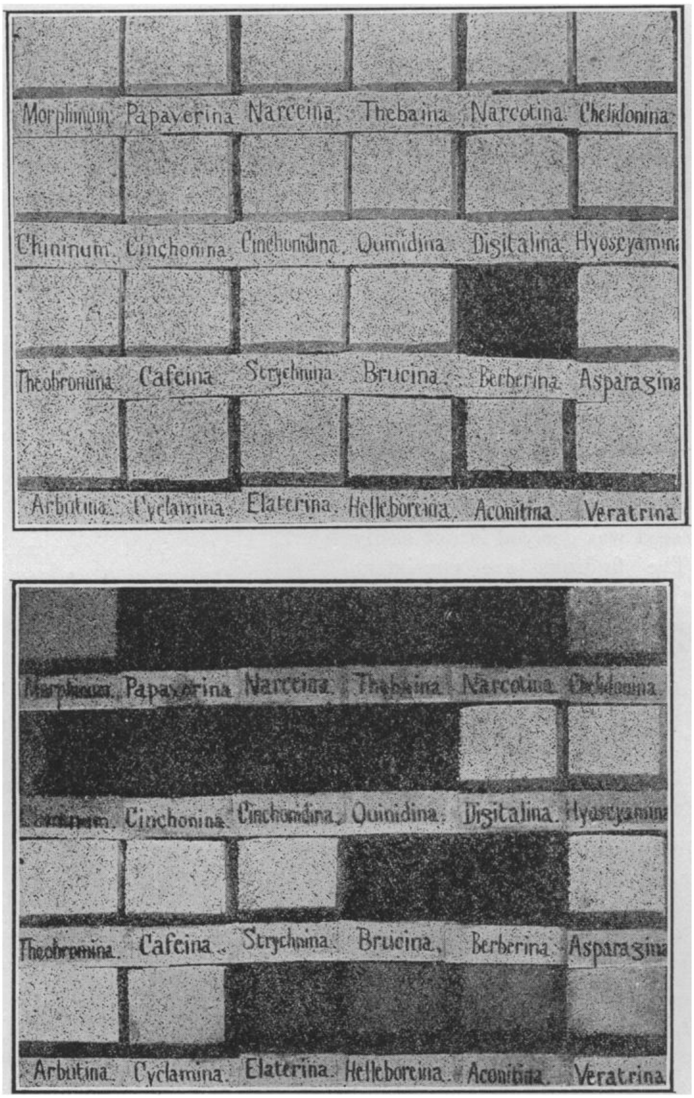
SOME CURIOUS CASES OF SELECTIVE REFLECTION IN ULTRAVIOLET LIGHT

PROFESSOR WOODS, of Johns Hopkins University, has found that some white flowers, when photographed in ultraviolet light, appeared as black or nearly so. This fact led the writer to examine the behavior, in such circumstances, of a number of alkaloids, glucosids and other vegetable immediate principles he happened to have on hand. The result is shown on the two accompanying figures. Photograph number I. was taken with an ordinary objective. Number II. is a photograph of the very same substances taken with a quartz convex meniscus, silvered on both faces and completely opaque to visible light. The 24 substances had been previously powdered and somewhat compressed into their respective boxes. As the ordinary photograph shows, they were, with but one exception (berberin) perfectly white. Photograph number II. shows that, if our eye were sensitive

to ultraviolet light, about two thirds of these white substances, when immerged in such light, would appear to us as black or dark gray. As a rule inorganic compounds do not compounds reflect ultraviolet light about as they reflect ordinary light.

The writer was unable to find any constant relation between the chemical constitution or



seem to behave in such an extraordinary manner. Excepting zinc oxyde which, as Professor Wood has shown, powerfully absorbs ultraviolet light, and bismuth sub-nitrate which, as the writer and Professor Tristan have found, reflects but little more ultraviolet light than zinc oxide, most inorganic physical properties of the 24 substances and their selective reflection for ultraviolet light.

The tremendous differences shown on the two photographs will probably one day find some application to analytical chemistry.

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